

What is claimed is:

Sub
a,
1. A system for measuring an angle of rotation, comprising:
an apparatus that measures the angle of rotation beyond a specific
reference point; and
an angle indicator linked to the apparatus that indicates the current angle
of rotation.

2. The system of claim 1, wherein the apparatus comprises:
an angle selector adjustable to a desired angle;
an angle rate sensor that measures the speed and direction of the rotation
applied;
a processor that calculates a current angle of rotation from the rate sensor
measurements;
a zero point indicator that that sets a zero point for the processor to
calculate the selected angle.

Sub
a2,
3. The apparatus of claim 2, wherein the zero point is based on torque.

4. The apparatus of claim 1, wherein the angle indicator is a digital
automotive tester.

5. The apparatus of claim 1, wherein the angle indicator is a digital
automotive tester and a sound-generating device that activates when the
selected angle of rotation has been reached.

6. The apparatus of claim 2, wherein the angle selector is a potentiometer.
7. The apparatus of claim 2, wherein the angle selector is a resistance ladder.
8. The apparatus of claim 2, wherein the processor is a microcontroller.

9. A device for measuring an angle of rotation beyond a specific reference point, comprising:

means for measuring an angle of rotation of the fastener from a fixed reference point; and

means for displaying the current angle of rotation.

10. The device of claim 9, wherein the means for measuring comprises means for selecting a desired angle of rotation, means for sensing data from the rate and speed of the rotation being applied to the fastener, means for calculating the angle of rotation from the data, means for indicating a zero point from which the means for calculating basis the angle measurement and means for indicating the current angle as determined by the means for calculating.

11. The device of claim 9, further comprising means for applying torque to a fastener.

12. A method for determining an angle of rotation of a fastener, the steps of:

measuring the angle of rotation as applied to the fastener; and

displaying the current angle of rotation.

13. The method of claim 12 wherein the step of measuring the angle of rotation comprises:

selecting a desired angle using an angle selector located on an apparatus comprising an angle selector, an angle rate sensor, a processor, a zero point indicator and an angle indicator;

indicating a zero point to the processor;

applying torque to the fastener with a tool to which the apparatus is attached to rotate the fastener;

measuring the rate and speed of the rotation with the angle rate sensor starting from the zero point;

calculating an angle of rotation using the processor; and

displaying the current angle of rotation.

14. The method of claim 13, further comprising the step of indicating that the processor has accepted the zero point.

15. The method of claim 12, further comprising the step of alerting that the desired selected angle of rotation has been reached.

16. A system for measuring an angle of rotation at a fastener beyond a specific reference point, comprising:

a tool that applies torque to a fastener to rotate the fastener;

an apparatus that measures the angle of rotation beyond a specific reference point; and

an angle indicator linked to the apparatus that indicates the current angle of rotation.

17. The system of claim 16 wherein the apparatus comprises:

an angle selector adjustable to a desired angle of rotation;
an angle rate sensor that measures the speed and direction of the rotation applied;
a processor that calculates a current angle of rotation from the rate sensor measurements; and
a zero point indicator that sets a zero point for the processor to calculate the selected angle.

18. The system of claim 16, wherein the tool comprises a ratchet.
19. The system of claim 16, wherein the tool comprises a socket.
20. The system of claim 17, wherein the angle selector comprises a potentiometer.
21. The system of claim 17, wherein the angle selector comprises a resistance ladder.
22. The system of claim 17, wherein the processor comprises a microcontroller.
23. The system of claim 17, wherein the angle indicator is a digital automotive tester.
24. The system of claim 17, wherein the angle indicator is a digital automotive tester and a sound generating device that activates when the

selected angle of rotation has been reached.

FILED " 04-49560